What is claimed is

1. A biomimetic membrane, comprising:

a block copolymer matrix simulating a natural biological membrane and natural protein environment; and

membrane proteins incorporated into said matrix to form a membrane/protein composite.

2. The membrane of claim 1, wherein the membrane/protein composite composes a device which has the function of the incorporated membrane proteins.

3. The membrane of claim 2, wherein the protein functions include valves, channels, sensors, detectors, pumps, and energy transducers.

4. The membrane of claim 1, wherein said membrane proteins are selected to transport only water molecules, whereby said biolmimetic membrane is a water filter.

5. The membrane of claim 4, wherein said membrane proteins are selected from the aquaporin family of proteins.

6. The membrane of claim 5, wherein said matrix is formed from tri-block copolymer.

7. The membrane of claim 5, wherein said matrix is impermeable to water, and wherein said membrane proteins are selected to permit passage of water molecules under pressure.

8. The membrane of claim 7, wherein said matrix is supported in a water

purification device to separate said device into first and second chambers, said membrane proteins permitting only water to flow between said chambers.

9. The membrane of claim 8, wherein said membrane proteins are aquaporins.

10. The membrane of claim 9, wherein said matrix is a biocompatible polymer selected from the group including poly (vinyl alcohol), poly (acrylamide) and sol-gels.

11. The membrane of claim 1, wherein said membrane proteins are natural biological proteins.

12. The membrane of claim 11, wherein two different membrane proteins are incorporated into said matrix.

13. The membrane of claim 12, wherein said membrane proteins are energy converting proteins.

14. The membrane of claim 1, wherein said matrix is incorporated in a thin fabric.

15. The membrane of claim 14, wherein said membrane proteins include bacteriorodopsin and cytochrome oxydase embedded in said matrix for converting optical energy to electrical energy.

16. The membrane of claim 15, wherein said matrix is a biocompatible polymer selected from the group including poly (vinyl alcohol), poly (acrylamide) and sol-gels.

17. The membrane of claim 15, further including first and second electrodes on opposite surfaces of said fabric for receiving said electrical energy.

18. The membrane of claim 1, wherein said matrix receives oriented bacteriorodopsin and cytochrome oxidase to produce a biosolar cell.

19. The membrane of claim 18, further including electrodes on opposite sides of said matrix.

20. The membrane of claim 18, wherein said matrix is a biocompatible polymer impermeable to protons.

21. A hybrid organic/inorganic power source, comprising:

a copolymer matrix; and

first and second different membrane proteins embedded in said matrix.

22. The power source of claim 21, further including a thin fabric material, said matrix being embedded in said fabric.

23. The power source of claim 22, wherein said membrane proteins are natural biological proteins.

24. The power source of claim 23, wherein said proteins comprise bacteriorodopsin and cytochrome oxidase for converting light energy into electrical energy.

25. The power source of claim 24, further including electrodes on opposed surfaces of said fabric for receiving said electrical energy.

26. A method of fabricating a biological membrane, comprising:

fabricating a block copolymer matrix; and

inserting in said matrix natural or genetically engineered membrane proteins.

27. The method of claim 26, further including orienting said membrane proteins in said matrix.

28. The method of claim 26, further including selecting said proteins to produce a corresponding membrane functionality.

29. The method of claim 26, further including inserting in said matrix two different membrane proteins.

30. The method of claim 29, further including exposing said matrix to light to produce electrical energy across said matrix.